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Tool Try-On Device

Background of the Invention

1. Field of the Invention

The present invention relates to a tool try-on device. In particular, the present invention relates to a device allowing a customer to try a tool such as a wrench before buying it.

2. Description of the Related Art

Taiwan Utility Model Publication No. 478450 discloses a tool rack including a board having a main portion. Two rows of socket-mounting pegs are provided on two lateral sides of the main portion of the board. A socket is releasably mounted on the respective socket-mounting peg. A tool-holding member is provided on an upper side of the main portion for releasably holding a tool such as a socket wrench. The tool rack can only provide a function of displaying the socket wrench and the sockets. A user could not know the exact operational condition of the socket wrench unless the user buys and uses it.

U.S. Patent No. 5,785,174 discloses a display pack having a rotatable security member, allowing a customer to try a wrench before buying. The display pack includes a board having a hole. The rotatable security member includes a shank having a toothed periphery that is engaged with a toothed inner periphery delimiting the hole of the board. An end of a wrench may be engaged with the rotatable security member and turned. The rotatable security member rotates in the hole of the board, with the toothed periphery of the rotatable security member shifting on the toothed inner periphery delimiting the hole. The wrench is operated as if it is fastening or unfastening a fastener. However, the try-on function provided by the teeth-to-teeth engagement is lost once the teeth are worn

1 out. Further, formation of the teeth incurs additional cost in manufacture. U.S.
2 Patent No. 6,409,015 discloses a tool pack with a flexible portion and a try-on
3 device. The try-on device also uses a teeth-to-teeth engagement to provide a
4 try-on function and thus has the same disadvantages.

5 **Summary of the Invention**

6 An object of the present invention is to provide a tool try-on device
7 without using teeth-to-teeth engagement.

8 In accordance with one aspect of the invention, a tool try-on device
9 includes a body and a frictional retaining member mounted to the body. The
10 frictional retaining member and the body together define a compartment for
11 receiving a rotatable member rotatably mounted to an end of a handle of a tool.
12 The frictional retaining member exerts a frictional force to an outer surface of the
13 rotatable member of the tool for retaining the rotatable member in place unless a
14 rotational force greater than the frictional force is applied to the handle of the tool
15 in a ratcheting direction.

16 The rotatable member is not turned when the handle of the tool is turned
17 in a reverse direction reverse to the ratcheting direction.

18 In an embodiment of the invention, the body includes two through-holes
19 extending from a first side of the body to a second side of the body opposite to the
20 first side of the body, with the frictional retaining member extending through the
21 through-holes of the body and extending across a portion of the outer surface of
22 the rotatable member of the tool, thereby exerting the frictional force to the
23 rotatable member of the tool. The frictional retaining member includes a first end
24 having a hole and a second end having a toothed side. The second end of the
25 frictional retaining member extends through the hole of the first end of the
26 frictional retaining member, with the toothed side of the second end of the

1 frictional retaining member engaging with a toothed wall delimiting the hole of
2 the first end of the frictional retaining member. The body may include a recessed
3 portion for receiving the rotatable member and the end of the handle of the tool.
4 The recessed portion of the body includes an end wall for preventing the tool
5 from being removed.

6 In another embodiment of the invention, the frictional retaining member
7 includes two ends each having a snapping member formed thereon. Each
8 snapping member of the frictional retaining member is engaged with the
9 respective through-hole of the body. The first side of the body may include an
10 arcuate groove for receiving a portion of the rotatable member.

11 In a further embodiment of the invention, the body includes two snapping
12 members formed on the first side thereof. The frictional retaining member
13 includes two ends each having a hole defined therein. The respective snapping
14 member of the body engages with the respective hole of the frictional retaining
15 member, thereby securing the frictional retaining member to the body and
16 exerting the frictional force to the rotatable member of the tool.

17 In still another embodiment of the invention, the body includes two
18 through-holes extending from a first side of the body to a second side of the body
19 opposite to the first side of the body. The frictional retaining member includes two
20 ends each having a hole defined therein. A snapping member engages with the
21 respective hole of the frictional retaining member and the respective hole of the
22 body, thereby securing the frictional retaining member to the body and exerting
23 the frictional force to the rotatable member of the tool.

24 In yet another embodiment of the invention, the body includes a
25 through-hole extending from a first side of the body to a second side of the body
26 opposite to the first side of the body. The frictional retaining member includes a

1 first end integrally formed with the body and a second end having a snapping
2 member formed thereon. The snapping member is engaged in the through-hole of
3 the body, thereby exerting the frictional force to the rotatable member of the tool.
4 A groove may be defined in a joint area between the first end of the frictional
5 retaining member and the body, providing a pivotal section about which the
6 second end of the frictional retaining member is pivotable.

7 In still another embodiment of the invention, the frictional retaining
8 member includes two ends that are integrally formed with the body. A wall that
9 delimits the compartment defined between the frictional retaining member and the
10 body has an arcuate groove for receiving a portion of the rotatable member of the
11 tool.

12 In yet another embodiment of the invention, the body includes a first
13 casing half and a second casing half each having a recessed portion that together
14 define the compartment for receiving the rotatable member and the end of the
15 handle of the tool. The first casing half and the second casing half include aligned
16 holes through which the frictional retaining member extends. The frictional
17 retaining member is mounted around the recessed portions, thereby exerting the
18 frictional force to the rotatable member of the tool. The frictional retaining
19 member includes a first end having a hole and a second end having a toothed side.
20 The second end of the frictional retaining member extends through the hole of the
21 first end of the frictional retaining member, with the toothed side of the second
22 end of the frictional retaining member engaging with a toothed wall delimiting the
23 hole of the first end of the frictional retaining member.

24 The tool try-on device may further include a stop on the first side of the
25 body for preventing the tool from being removed. In an alternative embodiment,
26 the frictional retaining member includes an integral stop extending therefrom for

1 preventing the tool from being removed. The integral stop of the frictional
2 retaining member is preferably L-shaped.

3 Other objects, advantages, and novel features of the invention will
4 become more apparent from the following detailed description when taken in
5 conjunction with the accompanying drawings.

6 **Brief Description of the Drawings**

7 Fig. 1 is a front view of a first embodiment of a tool try-on device in
8 accordance with the present invention, wherein the tool-try-on device is placed in
9 an upright position.

10 Fig. 2 is a sectional view taken along plane 2-2 in Fig. 1.

11 Fig. 3 is a sectional view taken along plane 3-3 in Fig. 1.

12 Fig. 4 is a view similar to Fig. 3, illustrating try-on of a tool in a reverse
13 direction.

14 Fig. 5 is a front view of a second embodiment of the tool try-on device in
15 accordance with the present invention.

16 Fig. 6 is a front view of a third embodiment of the tool try-on device in
17 accordance with the present invention.

18 Fig. 7 is a sectional view taken along plane 7-7 in Fig. 6.

19 Fig. 8 is a sectional view taken along plane 8-8 in Fig. 6.

20 Fig. 9 is a view similar to Fig. 8, illustrating try-on of a tool in a reverse
21 direction.

22 Fig. 10 is a front view of a fourth embodiment of the tool try-on device in
23 accordance with the present invention.

24 Fig. 11 is a perspective view of a fifth embodiment of the tool try-on
25 device in accordance with the present invention.

26 Fig. 12 is a sectional view taken along plane 12-12 in Fig. 11.

1 Fig. 13 is a view similar to Fig. 12, illustrating try-on of a tool.

2 Fig. 14 is a view similar to Fig. 13, illustrating try-on of the tool in a
3 reverse direction.

4 Fig. 15 is a view similar to Fig. 12, illustrating a sixth embodiment of the
5 tool try-on device in accordance with the present invention.

6 Fig. 16 is a front view illustrating a seventh embodiment of the tool try-on
7 device in accordance with the present invention.

8 Fig. 17 is a front view illustrating an eighth embodiment of the tool try-on
9 device in accordance with the present invention.

10 Fig. 18 is a view similar to Fig. 12, illustrating a ninth embodiment of the
11 tool try-on device in accordance with the present invention.

12 Fig. 19 is a view similar to Fig. 18, illustrating a tenth embodiment of the
13 try-on device in accordance with the present invention.

14 Fig. 20 is a view similar to Fig. 19, illustrating an eleventh embodiment
15 of the try-on device in accordance with the present invention.

16 Fig. 21 is a view similar to Fig. 20, illustrating a twelfth embodiment of
17 the try-on device in accordance with the present invention.

18 Fig. 22 is a perspective view illustrating a thirteenth embodiment of the
19 try-on device in accordance with the present invention.

20 Fig. 23 is a perspective view illustrating a fourteenth embodiment of the
21 try-on device in accordance with the present invention.

22 **Detailed Description of the Preferred Embodiments**

23 Referring to Fig. 1, a first embodiment of a tool try-on device 1 in
24 accordance with the present invention comprises a board or body 2 and a
25 frictional retaining member 4. For illustration, the body 2 in Fig. 1 is an upright
26 position. The board or body 2 may be formed by means of molding injection and

1 includes a tool-holding section 21 having a plurality of tool-holding members 22
2 for releasably holding tools such as spanners, combination wrenches, ratchet
3 wrenches, etc. The body 2 may further include at least one hanging hole 25,
4 allowing the body 2 to be hung on a wall or the like.

5 Of more importance, the body 2 includes two through-holes 23 extending
6 from a side of the body to the other side of the body 2 for mounting the frictional
7 retaining member 4. A stop 24 is provided on the body 2 and adjacent to the
8 through-holes 23. Referring to Figs. 2 and 3, the frictional retaining member 4 in
9 this embodiment is a strap wound around a rotatable member 32 of a tool 3. More
10 particularly, the strap includes a first end having a hole 44 and a second end
11 having a toothed side 45. The tool 3 is placed on an upper side (see Fig. 3) of the
12 body 2. The strap is placed below the body 2, with the second end of the strap
13 passing through one of the through-holes 23 of the body 2, crossing an upper
14 surface of the rotatable member 32 of the tool 3, passing through the other
15 through-hole 23 of the body 2, and passing through the hole 44 of the first end of
16 the strap. The toothed side 45 of the second end of the strap is engaged with a
17 toothed wall 46 delimiting the hole 44 of the first end of the strap.

18 The strap is tightened to an extent that the upper surface of the rotatable
19 member 32 of the tool 3 is in frictional contact with the strap (i.e., the frictional
20 retaining member 4). Preferably, the frictional retaining member 4 includes a
21 non-smooth inner side or an inner side having a non-smooth section. The tool 3 is
22 retained by the frictional retaining member 4. Further, the handle 31 of the tool 3
23 has an end in contact with the stop 24 on the body 2. Thus, the stop 24 prevents
24 removal of the tool 3 from the body 2 unless the frictional retaining member 4 is
25 removed. This provides an anti-theft function when the tool try-on device 1 is on
26 display.

1 The rotatable member 32 may be rotatably attached to the end of the
2 handle 31 in a conventional manner. In use, if a handle 31 of the tool 3 is turned
3 in a direction, e.g., counterclockwise, and if the rotational force applied to the
4 rotatable member 32 of the tool 3 is greater than the frictional force between the
5 rotatable member 32 and the frictional retaining member 4, the rotatable member
6 32 is turned together with the handle 31 relative to the body 2, as shown in Fig. 3.

7 If the handle 31 of the tool 3 is turned in a reverse direction, e.g.,
8 clockwise, the rotational force of the handle 31 is absorbed by a ratchet
9 mechanism mounted in the end of the handle 31 of the tool 3 without causing
10 rotational movement of the rotatable member 32. Thus, the rotatable member 32
11 is not turned when the handle 31 of the tool 3 is turned in the reverse direction, as
12 illustrated in Fig. 4. The ratchet mechanism allowing free rotation of the handle
13 31 of the tool 3 without causing rotational movement of the rotatable member 32
14 may be of a conventional design.

15 A customer may try the tool 3 by means of turning the handle 31 in the
16 counterclockwise direction as well as in the clockwise direction before buying the
17 tool 3. This would attract the customer, as the tool 3 is operated as if in a real
18 operation for tightening/loosening a fastener.

19 Fig. 5 illustrates a second embodiment of the tool try-on device 1 in
20 accordance with the present invention, wherein like reference numerals designate
21 like elements. In this embodiment, the body (now designated by 2') is a box
22 formed by blow molding and includes a recessed portion 21' in a side thereof for
23 accommodating at least the rotatable member 32 of the tool 3. Two through-holes
24 23' are defined in a bottom wall delimiting the recessed portion 21' for mounting
25 the frictional retaining member 4. An end of the handle 31 of the tool 3 abuts
26 against an end wall 20' of the recessed portion 21', avoiding removal of the tool 3

1 unless the frictional retaining member 4 is removed. Operation of the second
2 embodiment is substantially the same as that of the first embodiment.

3 Figs. 6 through 9 illustrate a third embodiment of the tool try-on device 1
4 in accordance with the present invention. In this embodiment, the body includes a
5 transparent first casing half 2'' and a transparent second casing half 5 (Fig. 7) that
6 are made of molding injection and that together define a compartment for
7 receiving the rotatable member 32 and an end of the handle 31 of the tool 3. In
8 particular, the transparent first casing half 2'' includes a recessed portion 21'' and
9 the transparent second casing half 5 includes a recessed portion 51, the recessed
10 portions 21'' and 51 together defining a compartment for receiving the rotatable
11 member 32 and an end of the handle 31 of the tool 3, as shown in Fig. 7. Further,
12 a bottom wall delimiting the recessed portion 21'' of the transparent first casing
13 half 2'' includes two through-holes 23'' through which the frictional retaining
14 member 4 extends. A bottom wall delimiting the recessed portion 51 of the
15 transparent second casing half 5 includes two holes 53 through which the
16 frictional retaining member 4 extends. As illustrated in Fig. 8, the frictional
17 retaining member 4 is extended through the through-holes 23'' and 53, with the
18 first end of the frictional retaining member 4 extending through the hole 44 in the
19 second end of the frictional retaining member 4 and with the toothed side 45
20 being engaged with the toothed wall 46 delimiting the hole 44 of the first end of
21 the frictional retaining member 4, which is substantially the same as that for the
22 first embodiment (see Fig. 3). The transparent casing halves 2'' and 5 are in
23 frictional contact with the outer surface of the rotatable member 32 of the tool 3
24 under the action of a clamping force provided by the frictional retaining member
25 4.

1 Further, the transparent casing halves 2'' and 5 include aligned openings
2 24'' and 53 for accommodating the handle 31 of the tool 3 and allowing turning of
3 the handle 31. A customer may turn the handle 31 of the tool 3 in a direction, e.g.,
4 counterclockwise. If the rotational force applied to the rotatable member 32 of the
5 tool 3 is greater than the frictional force between the rotatable member 32 and the
6 transparent casing halves 2'' and 5 imparted by the frictional retaining member 4,
7 the rotatable member 32 is turned together with the handle 31 relative to the body
8 of the tool try-on device 1, as shown in Fig. 8. The customer may turn the handle
9 31 of the tool 3 in a reverse direction, e.g., clockwise, in which the rotational
10 force of the handle 31 is absorbed by a ratchet mechanism mounted in the end of
11 the handle 31 of the tool 3 without causing rotational movement of the rotatable
12 member 32. Thus, the rotatable member 32 is not turned when the handle 31 of
13 the tool 3 is turned in the reverse direction, as illustrated in Fig. 9. Thus, the
14 customer may try the tool 3 by means of turning the handle 31 in the
15 counterclockwise direction as well as in the clockwise direction before buying the
16 tool 3.

17 Fig. 10 illustrates a fourth embodiment of the try-on device 1 in
18 accordance with the present invention, wherein the rotatable member (now
19 designated by 32') is in the form of an adaptor to which a bit is attached.

20 Figs. 11 and 12 illustrate a fifth embodiment of the tool try-on device 1 in
21 accordance with the present invention that is modified from the first embodiment.
22 The tool-holding section 21 in the first embodiment is omitted. The frictional
23 retaining member 4 has two ends each having a snapping member 41 formed
24 thereon. As illustrated in Fig. 12, the respective snapping member 41 of the
25 frictional retaining member 4 is engaged in the respective through-hole 23 of the
26 body 2 and thus retains the rotatable member 32 of the tool 3 in place while

1 providing a frictional contact between the frictional retaining member 4 and the
2 rotatable member 32.

3 A customer may turn the handle 31 of the tool 3 in a direction, e.g.,
4 counterclockwise. If the rotational force applied to the rotatable member 32 of the
5 tool 3 is greater than the frictional force between the rotatable member 32 and the
6 frictional retaining member 4, the rotatable member 32 is turned together with the
7 handle 31 relative to the body 2, as shown in Fig. 13. The customer may turn the
8 handle 31 of the tool 3 in a reverse direction, e.g., clockwise, in which the
9 rotational force of the handle 31 is absorbed by a ratchet mechanism mounted in
10 the end of the handle 31 of the tool 3 without causing rotational movement of the
11 rotatable member 32. Thus, the rotatable member 32 is not turned when the
12 handle 31 of the tool 3 is turned in the reverse direction, as illustrated in Fig. 14.
13 Thus, the customer may try the tool 3 by means of turning the handle 31 in the
14 counterclockwise direction as well as in the clockwise direction before buying the
15 tool 3.

16 Fig. 15 illustrates a sixth embodiment of the tool try-on device 1 in
17 accordance with the present invention modified from the fifth embodiment. In this
18 embodiment, the body 2 includes an arcuate recessed portion 26 (c.f. Fig. 12) for
19 receiving a portion of the rotatable member 32, thereby more reliably positioning
20 the rotatable member 32 of the tool 3 and providing a larger contact area between
21 the rotatable member 32 and the body 2.

22 Fig. 16 illustrates a seventh embodiment of the tool try-on device 1 in
23 accordance with the present invention modified from the fifth embodiment. In this
24 embodiment, the body 2 includes a stop 24 adjacent to or in intimate contact with
25 the end of the handle 31 of the tool 1, providing an anti-theft function mentioned
26 in the above embodiments.

1 Fig. 17 illustrates an eighth embodiment of the tool try-on device 1 in
2 accordance with the present invention modified from the seventh embodiment. In
3 this embodiment, the stop 24 in the seventh embodiment is replaced by a
4 substantially L-shaped integral stop 42 extending from an end of the frictional
5 retaining member 4, providing an anti-theft function.

6 Fig. 18 illustrates a ninth embodiment of the tool try-on device 1 in
7 accordance with the present invention modified from the fifth embodiment. In this
8 embodiment, the body 2 includes two snapping fasteners 27 provided on a side
9 thereof, and the frictional retaining member 4 is substantially U-shaped and has
10 two ends each having a hole 43 into which a respective snapping fastener 27 is
11 engaged. A frictional contact is provided between the frictional retaining member
12 4 and the rotatable member 32 of the tool 3.

13 Fig. 19 illustrates a tenth embodiment of the tool try-on device 1 in
14 accordance with the present invention. In this embodiment, the body 2 includes
15 two through-holes 23, and the frictional retaining member 4 is substantially
16 U-shaped and has two ends each having a hole 43. A snapping fastener 47 is
17 engaged into the respective hole 43 of the frictional retaining member 4 and the
18 respective through-hole 23 of the body 2, thereby retaining the respective end of
19 the frictional retaining member 4 in place and thus providing a frictional contact
20 between the frictional retaining member 4 and the rotatable member 32 of the tool
21 3.

22 Fig. 20 illustrates an eleventh embodiment of the try-on device 1 in
23 accordance with the present invention. In this embodiment, the body 2 has a
24 through-hole 23, and the frictional retaining member (now designated by 4')
25 includes a first end 42' that is integrally formed with the body 2. A substantially
26 V-shaped groove 43' is defined in a joint section between the first end 42' of the

1 frictional retaining member 4' and the body 2, providing a pivotal section that
2 allows pivotal movement of the first end 42' of the frictional retaining member 4'
3 relative to the body 2. As illustrated in Fig. 20, the frictional retaining member 4'
4 may be pivoted from a position shown by phantom lines to a position shown by
5 solid lines, with the frictional retaining member 4' extending across a portion of
6 the outer surface of the rotatable member 32 of the tool 3, and with a snapping
7 member 41' on a second end of the frictional retaining member 4' engaging with
8 the through-hole 23 of the body 2. A frictional force is thus provided between the
9 frictional retaining member 4' and the rotatable member 32 of the tool 3.

10 Fig. 21 illustrates a twelfth embodiment of the try-on device 1 in
11 accordance with the present invention. In this embodiment, two ends of the
12 frictional retaining member (now designated by 4'') are integrally formed with a
13 side of the body 2, defining a compartment 49 between the frictional retaining
14 member 4'' and the body 2. The rotatable member 32 of the tool 3 may be inserted
15 into the compartment 49. A wall delimiting the compartment 49 includes an
16 arcuate groove 48 configured to receive a portion of the outer surface of the
17 rotatable member 32. Thus, a frictional force is provided between the frictional
18 retaining member 4'' and the rotatable member 4 while allowing rotational
19 movement of the rotatable member 32 relative to the body 2, which is
20 substantially the same as the above-mentioned embodiments.

21 Fig. 22 illustrates a thirteenth embodiment of the try-on device 1 in
22 accordance with the present invention. In this embodiment, the try-on device 1 is
23 incorporated into and thus becomes a part of a tool rack 6 of another type.

24 Fig. 23 illustrates a fourteenth embodiment of the try-on device 1 in
25 accordance with the present invention. Similar to the fourth embodiment, the

1 rotatable member (now designated by 32') is in the form of an adaptor to which a
2 bit is attached.

3 In the embodiments using a stop 24, it is noted that the stop 24 may be
4 spaced away from the end of the handle 31 while providing an anti-theft function.

5 Although the invention has been explained in relation to its preferred
6 embodiment, it is to be understood that many other possible modifications and
7 variations can be made without departing from the scope of the invention as
8 hereinafter claimed.